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EXAMINER	
DUONG, FRANK	
ART UNIT	**PAPER NUMBER**
2666	4

DATE MAILED: 06/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)
	09/699,582	KAGAN ET AL.
	Examiner	**Art Unit**
	Frank Duong	2666

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 October 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 October 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. This Office Action is a response to the communication dated 10/30/2000. Claims 1-45 are pending in the application.

Information Disclosure Statement

2. The information disclosure statement filed 04/30/2001 complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. It has been considered and placed in the application file.

Specification

3. The disclosure is objected to because of the following informalities:

Page 8:

Line 5, "node 23" should read --node 24--.

Line 12, "link 27" should read --link 29--.

Line 13, "line 29" should read --link 27--.

Line 18, "node 22" should read --node 21--.

Appropriate correction is required.

Claim Objections

4. Claims 26, 27 and 43 are objected to because of the following informalities:

As per claim 26, line 3, "response.." should read --response.--.

As per claim 27, line 2, "the answer" should read --an answer--.

As per claim 43, line 14, "packets.." should read --packets.--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1-34 and 37-45 are rejected under 35 U.S.C. 102(a) as being anticipated by Berger et al (WO 00/25,485) (hereinafter "Berger").

Regarding **claim 1**, in accordance with the Berger reference entirety, Berger discloses a join process for a wireless mesh topology network where network nodes have multiple spatial coverage sub-sectors together covering a larger sector angle, where a node can establish connection with other nodes located in directions covered by its sub-sectors (*see Figs 3-4 and page 16, line 9 to page 17, line 26 for the claimed environment of the preamble of the claim*), the join process (*Fig. 8*) for adding a joining node (*any node of Fig. 4 or 6*) to the network (*Fig. 4 or 6*) comprising:

the joining node (*unaffiliated node*) starts listening to its sub-sectors at specific receiving frequencies for a defined time and thereafter changes its sub-sectors and its receiving frequencies according to a defined timing and sequence (*see Fig. 8 and page 12, lines 31-35 and page 27, lines 30 to page 28, line 2, Berger discloses the [unaffiliated] radio node listens for an invitation signal in a spatial azimuth at a given frequency for a sufficient length of time. Having not received an invitation signal, it has*

to scans to the next frequency and azimuth. Also see page 18, lines 7-16 for the explanation of scheduled transmission and directional transmission); and

active networks nodes (*neighbor nodes*) transmit organized invitation (*admission invitation*) data packets on defined sectors (*spatial azimuth*), frequencies and timing, based on their relative location and relative angle orientation deduced from sub-sectors already used for existing internal network communication (*see page 18, lines 7-12*), thus reducing frequency interference (*page 21, lines 12-13*) and reducing time required for the join process (*note: On page 27, last paragraph continues to page 28, first paragraph, Berger discloses radio node listens for an invitation signal in a spatial azimuth at a given frequency for a sufficient length of time. Having not received an invitation signal, it has to scan to the next frequency and azimuth. From the passage, it is concluded the neighbor nodes transmit invitation signals on defined sectors, frequencies and timing based on their relative location and relative angle orientation deduced from sub-sectors. As stated on page 26, last paragraph, the sole purpose of the distributed admission protocol is to enable radio nodes to join the network and become an efficient participant as well as increasing network throughput with reduction of mutual interference (see page 10, lines 20-21)*).

Regarding **claim 2**, in addition to features recited in base claim 1 (see rationales discussed above), Berger also discloses one active network node distributed the schedule for the organized invitation data packets to other active network nodes (*see page 27, second paragraph, Berger discloses once radio node receive invitation signal, it will begin exchanging status information with its first neighbor and through it, learn*

about the schedules of the immediate neighborhood and thus begin to exchange status information with additional neighbor).

Regarding **claim 3**, in addition to features recited in base claim 1 (see rationales discussed above), Berger also discloses an external network node (NMS) which distributes the schedule for the organized invitation data packets to the network nodes (*see page 10, second paragraph, Berger, in reference to Fig. 2, discloses radio node 16 may communicate with node 17-20 and acts as a repeater for an information transmitted from WAN access BAP-1 to nodes 17-19. Moreover, on page 13, first paragraph, Berger further discloses an optimized spectrum allocation could be downloaded from the NMS (Network Management System) based on network data flow information observed and studied by an external system*).

Regarding **claim 4**, in addition to features recited in base claim 1 (see rationales discussed above), Berger also discloses communicating using only a single sector which covers a single spatial sector from one active network node having a single spatial coverage sub-sector (*see page 9, last paragraph continues to page 10, first paragraph, Berger discloses radio nodes can create directional communication with certain nodes simultaneously as other nodes in the surrounding vicinity communicate with other nodes using the beam steering capability via selection of sectorial antenna, or by using a phased array antenna, which could be on-dimensional antenna only for terrestrial use or a two dimensional for terrestrial*).

Regarding **claim 5**, in accordance with the Berger reference entirety, Berger discloses a method for admitting a joining node (*any node of Fig. 2 or 4 or 6*) to a wireless mesh network (Fig. 2 or 4 or 6) comprising:

transmitting an invitation packet (*invitation signal*) form one or more active nodes (*neighbor nodes of unaffiliated node in Fig. 2, 4 or 6*) of the wireless mesh network (*page 8, lines 16*-17 and page 17, line 34) at synchronized scheduled transmission times, frequencies, and scheduled transmission directions over defined spatial directions (*see Fig. 8 and page 12, lines 31-35 and page 27, lines 30 to page 28, line 2, Berger discloses the [unaffiliated] radio node scans the frequency channels as well as the spatially different directions in the neighborhood for admission invitation signals. Also see page 18, lines 7-16 for the explanation of scheduled transmission and directional transmission. The invitation signal is equated as "invitation packet" because Berger's system is a packet radio wireless mesh network*), and

after a delay time (*inherent due to air medium*), detecting (*receiving*) a transmitted response (*packet from responder to originator*) from the joining node at defined spatial direction (*direction of the antenna*) (*note: On page 27, second paragraph, Berger discloses once the radio receives an invitation signal, it will begin exchanging status information with its neighbor. In addition, on page 21, Berger discloses the handshaking process involving transmission of packets from originator to responder and vice versa. It is implicit that during the course of handshaking process, the packet from the responder is received by the originator).*

Regarding **claim 6**, in addition to features recited in base claim 5 (see rationales discussed above), Berger also discloses wherein transmitting the invitation comprises transmitting data about the predetermined delay time for use by the joining node transmitting the response (*see page 21, first paragraph and page 20, table 1, "Link Parameters for status"*).

Regarding **claim 7**, in addition to features recited in base claim 5 (see rationales discussed above), Berger also discloses wherein transmitting comprises scanning an initial direction; and subsequently, scanning first other directions in a predetermined order while skipping second other directions in order to reduce locating time for the joining node (*see page 21, first paragraph and page 20, table 2, "Preference Weight" and page 22, last paragraph to page 23, first paragraph. The "skipping second other direction" is equated as "missing its appointment with some neighbors"*).

Regarding **claim 8**, in addition to features recited in base claim 5 (see rationales discussed above), Berger also discloses wherein transmitting comprises: transmitting multiple invitations to respective portions of coverage space of a node of the wireless network (*see page 27, lines 25-27, "admission invitation signals", and page 9, last paragraph to page 10, first paragraph*).

Regarding **claim 9**, in addition to features recited in base claim 8 (see rationales discussed above), Berger also discloses wherein transmitting comprises: transmitting multiple invitations on respective antenna beams (*see page 27, lines 25-27, "admission invitation signals", and page 9, last paragraph to page 10, first paragraph*).

Regarding **claim 10**, in addition to features recited in base claim 8 (see rationales discussed above), Berger also discloses wherein transmitting comprises: transmitting multiple invitations at respective frequencies (*see page 27, lines 25-27, "admission invitation signals", and page 9, last paragraph to page 10, first paragraph and page 12, last paragraph*).

Regarding **claim 11**, in addition to features recited in base claim 5 (see rationales discussed above), Berger also discloses wherein transmitting comprises: transmitting non-overlapping invitations from two or more nodes of the wireless mesh network (*see page 27, lines 25-27, "admission invitation signals", and page 27, lines 10-12).*

Regarding **claim 12**, in addition to features recited in base claim 11 (see rationales discussed above), Berger also discloses at non-transmitting nodes of the wireless network, suspending transmission (*change frequency channel or "remain silent"*) which could interfere with the non-overlapping invitations during transmission thereof (*see page 10, lines 18-24; "change frequency channel" and page 18, first paragraph; "remain silent"*).

Regarding **claim 13**, in addition to features recited in base claim 5 (see rationales discussed above), Berger also discloses wherein transmitting comprises: transmitting the invitation from a first set of inviting nodes during a first set of invitation period; and transmitting the invitation from a second set of inviting nodes during a second period (*see page 9, last paragraph; "time division access combined with*

transmission in a selected sectorial region" *and page 15, last paragraph, "SR use TDD scheme"*).

Regarding **claim 14**, in addition to features recited in base claim 13 (see rationales discussed above), Berger also discloses selecting the first set of inviting nodes and the second set of inviting nodes according to predetermined scheduling criterion (*see page 13, first paragraph; "channel selection*").

Regarding **claim 15**, in addition to features recited in base claim 14 (see rationales discussed above), Berger also discloses selecting members of each set of inviting nodes to reduce possibility that the joining node will substantially simultaneously be detecting in direction of the same coverage area of more than one active node of the wireless mesh network (*see page 14, for the explanation of "network availability" and "network reliability"*).

Regarding **claim 16**, in addition to features recited in base claim 5 (see rationales discussed above), Berger also discloses wherein detecting a transmitted response comprises: configuring the one or more nodes for detection of the transmitted response (*see page 21, for the explanation of "Handshake*" and page 22, last paragraph, for "Handshake scheduling").

Regarding **claim 17**, in addition to features recited in base claim 5 (see rationales discussed above), Berger also discloses wherein detecting a transmitted response comprises: configuring network nodes for detection of the transmitted response during a listen time period (*see page 26, last paragraph to page 27, line 2 and lines 30-35*).

Regarding **claim 18**, in addition to features recited in base claim 17 (see rationales discussed above), Berger also discloses wherein configuring comprises designating a plurality of nodes for detection of the transmitted response (*see page 10, second paragraph*); and scanning non-overlapping portions of the coverage space of the wireless mesh network (*see page 27, last paragraph to page 28, line 2*).

Regarding **claim 19**, in addition to features recited in base claim 18 (see rationales discussed above), Berger also discloses wherein scanning comprises at each node, scanning at least one of communication sectors and frequencies so as to detect the answer transmitted from the joining node in a unique location of the coverage space of the wireless mesh network (*see page 27, last paragraph to page 28, line 2*).

Regarding **claim 20**, in addition to features recited in base claim 5 (see rationales discussed above), Berger also discloses at a control location, authorizing only the one or more nodes to transmit the invitation (*see page 18, first paragraph, Berger discloses Subscriber nodes in the sector that might interfere with the communication are controlled by the MAC layer to remain silent during the scheduled transmission*).

Regarding **claim 21**, in addition to features recited in base claim 5 (see rationales discussed above), Berger also discloses designating the one or more nodes based on respective coverage space (sector) of nodes of the wireless mesh network (*see page 18, first paragraph).*

Regarding **claim 22**, in addition to features recited in base claim 20 (see rationales discussed above), Berger also discloses wherein designating comprises

designating the one or more nodes based on geographic coverage space (sector) of respective nodes (*see page 18, first paragraph).*

Regarding **claim 23**, in addition to features recited in base claim 20 (see rationales discussed above), Berger also discloses wherein designating comprises designating the one or more nodes based on frequency coverage space (sector) of respective nodes (*see page 18, first paragraph).*

Regarding **claim 24**, in addition to features recited in base claim 21 (see rationales discussed above), Berger also discloses receiving information (map) about location of the joining node; and relating the position (Node ID) of the joining node and coverage space (*Beam Direction*) of nodes of the wireless mesh network (see page 20, Table 1)

Regarding **claim 25**, in addition to features recited in base claim 24 (see rationales discussed above), Berger also discloses prioritizing (*priority*) one or more portion of the coverage space (*sector*) of the wireless mesh network for transmitting the invitation based on the information about the location of the joining node (*see page 16, line 24 and page 25, first paragraph*).

Regarding **claim 26**, in addition to features recited in base claim 5 (see rationales discussed above), Berger also discloses determining position information (*Beam Direction*) for the joining node based on the transmitted response (*see page 20, Table 1; "Beam Direction"*).

Regarding **claim 27**, in addition to features recited in base claim 24 (see rationales discussed above), Berger also discloses receiving radio link directional

information in an answer at a node of the wireless mesh network (*see page 28, lines 13-16*); and from the radio link directional information and position of the node, determining the position information for the joining node (*see page 28, lines 26-29*).

Regarding **claim 28**, in addition to features recited in base claim 5 (see rationales discussed above), Berger also discloses resolving a collision from substantially simultaneous responses of two or more joining nodes using an exponential. back off process at the joining node (*see page 21, lines 10-15, Berger discloses the use of scheduled handshake times to expedite interference avoidance procedure. In packet radio network, it is inherent that the interference avoidance procedure uses and exponential back off process*).

Regarding **claim 29**, in accordance with the Berger reference entirety, Berger discloses a method for admitting a joining node (*any node of Fig. 2 or 4 or 6*) to a wireless mesh network including networks nodes (SRs) (Fig. 2 or 4 or 6), the method (*see page 21, first paragraph and page 27, line 4 to page 29, line 9*) comprising:

receiving (*consulting*) location information (*configuration database*) for the joining node (*mesh radio affiliation*) (*see page 13, first paragraph, Berger discloses an optimized spectrum allocation could be downloaded from the NMS (Network Management System) based on network data flow information observed and studied by and external network. Moreover, on page 27, lines 7-9, Bergers discloses [upon power up] the radio node consults its configuration database to determine its mesh radio affiliation*);

designating at least one network node (*potential neighbor*) for initiating communication with the joining node (*see page 27, lines 10-12, Berger discloses the [unaffiliated] radio node shall listen for admission invitation signals form potential neighbors*);

transmitting invitation packets at the at least one network node in a direction towards an anticipated location of the joining node; and receiving an answer at a network node in response of an invitation packet (*see page 27, lines 12-16, Berger discloses once the radio receives an invitation signal [from its potential neighbor], it will begin exchange status information with its first neighbor and through it, learn about the schedules of the immediate neighbor and thus begin to exchange status information with additional neighbors. See page 20, Table 1 for explanation of status information and page 21, lines 18-29 for explanation of Handshaking procedure*).

Regarding **claim 30**, in addition to features recited in base claim 29 (see rationales discussed above), Berger also discloses communicating between the network node and the joining node for selecting antenna spatial sub sectors for optimal communication (*see page 28, lines 13-35 and page 18, lines 7-12*).

Regarding **claim 31**, in addition to features recited in base claim 29 (see rationales discussed above), Berger also discloses transmitting invitation packets at a first network node at a first frequency; and substantially simultaneously, transmitting invitation packets at a second node at a second frequency (*see page 27, lines 10-12, Berger discloses the [unaffiliated] radio node shall listen for admission invitation signals from potential neighbors. Since the environment of Berger's system is wireless mesh*

network and the radio node can choose a spatial direction to transmit and to receive based on the locations of the receiving/transmitting nodes in its LOS (see page 18, lines 7-12). It is inherent that Berger discloses the limitations set forth).

Regarding **claim 32**, in addition to features recited in base claim 29 (see rationales discussed above), Berger also discloses at the first node, scanning sectors (azimuth) according to a first order (*first frequency and azimuth*) ; and at the second node, scanning sectors according to a second order (*second frequency and azimuth*) to avoid collision (inference avoidance) in receiving the answer (*see page 27, last paragraph to page 28, line 2, Berger discloses having node received an invitation signal, it [radio node] ahs to scan to the next frequency and azimuth. Moreover, on page 21, first paragraph, Berger discloses radio node will consult its tables for each packet destination and decide, based on scheduled handshakes and preference weighting, where a packet transmission is to go and when such transmission is to be attempt to reduce the interference as well as expedite interference avoidance procedures*).

Regarding **claim 33**, in addition to features recited in base claim 32 (see rationales discussed above), Berger also discloses wherein the first order and the second order change for each scan (*see page 28, lines 1-2*).

Regarding **claim 34**, in addition to features recited in base claim 32 (see rationales discussed above), Berger also discloses wherein the first order and the second order differs if the first network node and the second network node are neighbors (*see page 28, lines 1-2*).

Regarding **claim 37**, in accordance with the Berger reference entirety, Berger discloses a method for adding a joining node (*any node of Fig. 2 or 4 or 6*) to a wireless mesh network including networks nodes (SRs) (Fig. 2 or 4 or 6), the method (*see page 21, first paragraph and page 27, line 4 to page 29, line 9*) comprising:

designating at least one network node (*potential neighbor*) for initiating communication with the joining node (*see page 27, lines 10-12, Berger discloses the [unaffiliated] radio node shall listen for admission invitation signals form potential neighbors*);

at the at least one network node, to initiate communication with the joining node, scanning on a first sector with highest probability of locating the joining node (*see page 27, line 36 to page 28, line 1*);

subsequently scanning on sectors of lower probability of locating the joining node (*see page 28, lines 1-2*); and

receiving an answer at a network node in response to an invitation packet (*see page 27, lines 12-16, Berger discloses once the radio receives an invitation signal [from its potential neighbor], it will begin exchange status information with its first neighbor and through it, learn about the schedules of the immediate neighbor and thus begin to exchange status information with additional neighbors. Also see page 20, Table 1 for explanation of status information and page 21, lines 18-29 for explanation of Handshaking procedure*).

Regarding **claim 38**, in addition to features recited in base claim 37 (see rationales discussed above), Berger also discloses wherein subsequently scanning

comprises: scanning on sectors immediately adjacent to the first sector; and subsequently scanning on sectors immediately adjacent to the sectors immediately adjacent to the fist sector (*see page 28, lines 1-2 and 7-9. The sequencing states (I0=>I1 and I1=>I0 and the antenna features of radio node described on page 9, last paragraph to page 10, first paragraph, implicitly and inherently read on the claimed limitations set forth*).

Regarding **claim 39**, in addition to features recited in base claim 37 (see rationales discussed above), Berger also discloses wherein subsequently scanning comprises: skipping (missing) scanning on sectors immediately adjacent sectors already scanned; and subsequently scanning on sectors immediately adjacent to the skipped sectors (*see page 28, lines 1-2 and 7-9. The sequencing states (I0=>I1 and I1=>I0 and the antenna features of radio node described on page 9, last paragraph to page 10, first paragraph, implicitly and inherently read on the claimed limitations set forth*).

Regarding **claim 40**, in addition to features recited in base claim 37 (see rationales discussed above), Berger also discloses receiving (*consulting*) information (*configuration database*) about location of the joining node (*mesh radio affiliation*) (*see page 13, first paragraph, Berger discloses an optimized spectrum allocation could be downloaded from the NMS (Network Management System) based on network data flow information observed and studied by and external network. Moreover, on page 27, lines 7-9, Bergers discloses [upon power up] the radio node consults its configuration database to determine its mesh radio affiliation*);

based on the information about the location of the joining node, identifying the first sector with highest probability of locating the joining node (*see page 27, lines 10-12, Berger discloses the [unaffiliated] radio node shall listen for admission invitation signals form potential neighbors based on the configuration database (see page 27, lines 5-20. Moreover, the radio node listens for an invitation signal in a spatial azimuth at a given frequency for a sufficient length of time. Having not received an invitation signal, it has to scan to the next frequency and azimuth (see page 27, last paragraph to page 28, line 2).*

Regarding **claim 41**, in addition to features recited in base claim 37 (see rationales discussed above), Berger also discloses receiving (*consulting*) information (*configuration database*) about location of the joining node (*mesh radio affiliation*) (*see page 13, first paragraph, Berger discloses an optimized spectrum allocation could be downloaded from the NMS (Network Management System) based on network data flow information observed and studied by and external network. Moreover, on page 27, lines 7-9, Bergers discloses [upon power up] the radio node consults its configuration database to determine its mesh radio affiliation*);

based on the information about the location of the joining node, identifying the first sector with highest probability of locating the joining node (*see page 27, lines 10-12, Berger discloses the [unaffiliated] radio node shall listen for admission invitation signals form potential neighbors based on the configuration database (see page 27, lines 5-20. Moreover, the radio node listens for an invitation signal in a spatial azimuth at a given frequency for a sufficient length of time. Having not received an invitation*

signal, it has to scan to the next frequency and azimuth (see page 27, last paragraph to page 28, line 2); and assigning each identified network node to transmit in the direction of the location of the joining node (see page 28, lines 30-35, Berger discloses the radio node [after successful completion of first exchange] schedule subsequent exchanges with other radio nodes in the neighborhood).

Regarding **claim 42**, in addition to features recited in base claim 37 (see rationales discussed above), Berger also discloses transmitting an invitation transmission from the at least one network node (*see page 21, lines 6-10*); and synchronizing (*scheduling handshake*) at least one of time, direction and frequency of the invitation transmission by the at least one network node to avoid interference at the joining node (*see page 18, lines 13-16 or page 21, lines 10-15*).

Regarding **claim 43**, in accordance with the Berger reference entirety, Berger discloses a method for adding one or more joining nodes (*any node of Fig. 2 or 4 or 6*) to a wireless mesh network, the method (*see page 21, first paragraph and page 27, line 4 to page 29, line 9*) comprising:

scheduling transmission of data packets by inviting network nodes (*potential neighbors*) on defined frequency channels and at defined directions to create spectral activity for detection of the spectral activity by the one or more joining nodes (*unaffiliated radio nodes*) (*see page 18, lines 13-16, Berger discloses the scheduled transmission and page 27, lines 10-12, Berger discloses radio node shall listen for admission invitation signals from potential neighbors*); and

at a joining node of the one or more joining nodes, scanning the defined frequency channel and at different spatial directions to identify radio frequency activity of the inviting network nodes (*potential neighbors*) at the defined frequency channels (*see page 27, last paragraph to page 28, line 2, Berger discloses the [unaffiliated] radio node listens for an invitation signal in a spatial azimuth at a give frequency for a sufficient length of time*), identifying spatial directions (*next listening frequency and spatial azimuth*) toward the inviting network nodes (*potential neighbors*) (*see page 28, lines 3-12*), and tuning (*housekeeping functions*) to a defined frequency channel in the identified spatial direction to receive an invitation packet transmitted by the inviting network nodes between the data packets (*see page 27, lines 30-35 and Fig. 7, states I0=>I2*).

Regarding **claim 44**, in addition to features recited in base claim 43 (see rationales discussed above), Berger also discloses wherein transmission of data packets (*see page 22, Table 3*) comprises: transmitting a radio frequency activity burst of information at a defined frequency channel and in one or more defined spatial directions (*see page 21, line 30 to page 23, line 6*).

Regarding **claim 45**, in addition to features recited in base claim 43 (see rationales discussed above), Berger also discloses wherein the data packets comprise short burst of data, have a duration shorter than duration of the invitation packets and are transmitted more frequently than the invitation packets (*see page 21, lines 18-34 and table 3 on page 22 for the size of handshaking packets and data packets*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berger in view of Arnold et al (USP 5,884,181) (hereinafter "Arnold").

Regarding **claim 35**, in addition to features recited in base claim 29 (see rationales discussed above), Berger fails to explicitly disclose the claimed limitation of "*receiving coordinate data from a GPS receiver*". However, such limitation lacks thereof from Berger reference is well known and taught by Arnold.

In accordance with Arnold reference entirety, Arnold discloses a local multipoint distribution system, comprising, among other things, the limitation of "receiving coordinate data from a GPS receiver" (see '181, col. 9, last paragraph).

It would have been obvious to those skilled in the art at the time of the invention was made to implement Arnold's teaching into Berger's method to arrive the claimed invention with a motivation to improve the interference reduction (see '181, col. 4, lines 16-19).

Regarding **claim 36**, in addition to features recited in base claim 35 (*see rationales discussed above*), Berger fails to explicitly disclose the claimed limitation of "*receiving coordinate data from a GPS receiver integrated with the joining node*".

However, such limitation lacks thereof from Berger reference is well known and taught by Arnold.

In accordance with Arnold reference entirety, Arnold discloses a local multipoint distribution system, comprising, among other things, the limitation of "*receiving coordinate data from a GPS receiver integrated with the joining node* (*earth station*)" (see '181, col. 9, last paragraph).

It would have been obvious to those skilled in the art at the time of the invention was made to implement Arnold's teaching into Berger's method to arrive the claimed invention with a motivation to improve the interference reduction (see '181, col. 4, lines 16-19).

7. Claims 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berger in view of Ayyagari et al (USP 6,018,659) (hereinafter "Ayyagari").

Regarding **claim 35**, in addition to features recited in base claim 29 (see rationales discussed above), Berger fails to explicitly disclose the claimed limitation of "*receiving coordinate data from a GPS receiver*". However, such limitation lacks thereof from Berger reference is well known and taught by Ayyagari.

In accordance with Ayyagari reference entirety, Ayyagari discloses an airborne broadband system, comprising, among other things, the limitation of "receiving coordinate data from a GPS receiver" (see '659, col. 5, last paragraph).

It would have been obvious to those skilled in the art at the time of the invention was made to implement Ayyagari's teaching into Berger's method to arrive the claimed

invention with a motivation to provide a low cost, easily maintainable, and fast deployable communication system (see ‘659, col. 2, lines 46-50).

Regarding **claim 36**, in addition to features recited in base claim 35 (*see rationales discussed above*), Berger fails to explicitly disclose the claimed limitation of “*receiving coordinate data from a GPS receiver integrated with the joining node*”. However, such limitation lacks thereof from Berger reference is well known and taught by Ayyagari.

In accordance with Ayyagari reference entirety, Ayyagari discloses an airborne broadband system, comprising, among other things, the limitation of “*receiving coordinate data from a GPS receiver integrated with the joining node* (*‘659, Fig. 4; element 122*)”.

It would have been obvious to those skilled in the art at the time of the invention was made to implement Ayyagari’s teaching into Berger’s method to arrive the claimed invention with a motivation to provide a low cost, easily maintainable, and fast deployable communication system (see ‘659, col. 2, lines 46-50).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hughes et al (USP 6,553,020).

Bustamante et al (USP 5,809,431).

Acampora (USP 6,049,593).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Duong whose telephone number is (703) 308-5428. The examiner can normally be reached on 7:00AM-3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (703) 308-5463. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

Frank Duong
June 3, 2003